# CURRICULUM VITAE

## STEVEN M. RUBEN


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**Date and Place of Birth:** April 20, 1956, Cleveland, Ohio

**Social Security No.:** 274-42-1919

**Marital Status:** Married, 2 children


**Business Address:** Celera Genomics
45 W. Gude Drive
Rockville, MD 20850
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**Education:**

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| 1988 | Ph.D., Cell/Molecular Biology Program, University of Cincinnati Cincinnati, OH Ralph R. Meyer, Ph.D. Advisor, Thesis: Suppression of *Escherichia coli ssb-1* mutation by an allele of *groEL* |
| 1985 | M.S., Cell/Molecular Biology Program, University of Cincinnati, Cincinnati, OH |
| 1979 | B.S., Biochemistry, Ohio State University, Columbus, OH |

**Professional Experience:**

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| 2003-Present | Vice President Protein Therapeutics, Celera Genomics, Rockville, MD |
| 1999-2003 | Vice President Research, Human Genome Sciences, Rockville, MD |
| 1996-1998 | Director, Molecular Biology Department, Human Genome Sciences, Rockville, MD |
| 1993-1996 | Associate Director, Molecular Biology Department, Human Genome Sciences, Rockville, MD |
| 1992-1993 | Scientist, Molecular Biology Department, Human Genome Sciences, Rockville, MD |

1991-1992 Research Associate, Laboratory of Dr. Craig Rosen Department of Gene Regulation, Roche Institute of Molecular Biology, Nutley, NJ

1989-1992 Leukemia Society of America Fellow, Laboratory of Dr. Craig Rosen Department of Gene Regulation, Roche Institute of Molecular Biology, Nutley, NJ and Department of Microbiology, University of Medicine and Dentistry of New Jersey, Newark, NJ

1987-1989 Postdoctoral Fellow, Laboratory of Dr. Craig Rosen, Department of Molecular Oncology, Roche Institute of Molecular Biology, Nutley, NJ

1980-1986 Teaching Assistant, General Biology Laboratory, Department of Biological Sciences, University of Cincinnati, Cincinnati, OH

**Research Experience:**

**Vice President Protein Therapeutics, Celera Genomics**

- Direct oversight of Protein Therapeutic Staff, with 11 Ph.D.'s and 23 support staff with a research budget of 12.5 M
- Oversight of high throughput Mass Spectrometry Lab, Cell Biology Lab, and Tissue Acquisition efforts
- Co-ordination of discovery efforts for identification and validation of novel therapeutic opportunities for antibody, small molecule and diagnostic drugs using proteomic discovery platform and bioinformatics tools
- Leverage these opportunities with downstream antibody development provided by fully integrated biopharmaceutical companies. Instrumental in Genentech, Seatle Genetics and Abbott Laboratories-Celera alliance for co-development of mAb antibodies against differentially expressed tumor antigens, July-Sept. 2004. Member of JMC for Alliance partnerships
- Establish collaborative agreements with Medical institutions for the accrual of fresh tissue samples for proteomic platform

**Vice President Research, Human Genome Sciences**

- Direct oversight of the Preclinical Discovery Group with 13 Ph.D.'s and 53 support staff with a research budget of 13.7M
- Co-ordination across the Preclinical, Clinical, Regulatory and Protein Development Departments to identify therapeutic candidates and targets, validate the activities in vitro and in vivo and meet aggressive time lines for IND submissions. To date 3 gene, 2 antibody, and 1 gene therapy candidate have progressed through Preclinical development based on these efforts.
- Integration of Albumin fusion technology obtained from Principia Pharmaceuticals into discovery and development efforts. Nine candidates have progressed through advanced preclinical evaluation. One has entered Phase I studies.

- Establishment of pre-clinical yeast fermentation facility providing gram quantities of preclinical protein for in vitro and in vivo testing
- Oversight of the high throughput screening programs based on the Secretory Identification Program. To date, programs have been implemented for immune modulation, metabolic diseases and allergy/asthma. Collaborations have been established for a cardiovascular program and bone remodeling program
- Co-ordinate the transcriptional profiling program. This program includes arraying, quantitative PCR and database directed approaches. The arraying program has provided the basis of our Pharmacogenomics program, which supports both discovery efforts and clinical programs.
- Oversight and co-ordination of sequencing operations
- Established collaborations with multiple institutions to obtain both normal and tumor samples in an effort to identify cancer specific antigens.
- Established the HGS Antibody program through collaborations with Cambridge Antibody Technology and Abgenix.. Served on JRC for both collaborations. Oversight of initial development of the Anti-Blys (Lymphostat) program. Antibody Development Department was spun out from my group.
- Worked with Business Development to prepare out-licensing packages for novel candidates and in the assessment of new technology and opportunities to accelerate gene discovery and novel gene characterization
- Co-ordinate efforts with Patent and IT groups to establish and protect HGS intellectual property estate.
- Member of the Joint Research Council for Schering Plough collaboration
- Member of the Joint Research Council for Transgene collaboration
- HGS Chair of Joint Research Committee with Cambridge Antibody Technology and Abgenix

**Director**

- Responsibility for eleven Ph.D. scientists and support staff with a budget of 4.6M.
- Efforts included a secretory signal identification project. Aspects of this project included development of algorithms for selection of putative secreted proteins with the Bioinformatics Department, development of methodology for high throughput cloning, establishment of expression patterns using arrays, establishment of methods for stable and transient expression of secreted candidates and development of assay systems to identify biological activities of these molecules.
- A target identification project to identify small molecule targets was developed in the group in collaboration with the Bioinformatics group.
- Development of a transgenic and gene targeting facility within the department to complement the discovery program.
- Additional efforts within the department involved molecular biology support for IND candidates, discovery and characterization of potential therapeutic proteins, development of additional methods to "mine" the HGS database

**Associate Director**

- Responsible for seven Ph.D. scientists and support staff. The department focused on therapeutic protein identification and biological characterization of candidate genes.
- Co-ordinated the HGS cDNA library construction and sequencing schedules and pursued collaborations for novel tissue sources.
- Worked closely with the Bioinformatics Department to design and implement new strategies for organization of the database and candidate gene identification, including the strategies for secretory signal identification.
- Member of Joint Research Committee for Smith-Kline Beecham collaboration

**Scientist:**

- Research facilities setup, including equipment ordering, hiring, and framework for Bioinformatic interfaces for the EST database
- Focused on identification and characterization of novel therapeutic candidates from the HGS EST database. Candidates include a novel FAS ligand (Trail), a heart and lung specific DNase, and Stat6.
- Development of high-throughput sequencing template production using a PCR approach that was incorporated into the HGS template standard operating procedure.
- Member of the Research Steering Committee, for TIGR collaboration

**Postdoctoral research:**

As a research associate my work focused on the role that the *rel* family of proteins plays in the pathogenesis of both HIV-1 and HTLV-I. This family of proteins plays a critical role in activation of latent HIV virus. In addition, activation of these proteins by the HTLV-I Tax protein plays an important role in the pathways which lead to Adult T-cell Leukemia following HTLV-I infection. Using degenerate oligonucleotides

corresponding to highly conserved regions of the *rel* proteins as primers in PCR reactions using various cDNA's as template, three new *rel*-related proteins were identified, including the p65 subunit of NF-kB. Another one of these genes, I-Rel, is an inhibitor of NF-kB function. These genes were expressed for both mammalian expression and purification from *E. coli* and the transforming potential of these genes was measured using various assays. In addition, I directed a summer student and am directing the research of a post-doctoral fellow aimed at structure-function analysis of these proteins.

Prior postdoctoral research involved examination of the mechanisms of action of the viral regulatory proteins of HTLV-I and HIV-1 at both the nucleic acid and protein levels. This work emphasized the use of recombinant techniques of molecular biology as well as immunological analysis of protein expression in both eukaryotic and prokaryotic systems. Tissue culture work including transient and stable expression of viral genes was an integral part of this work. This work involved the construction and screening of cDNA libraries and isolation of monoclonal antibodies to study differential expression of cellular factors resulting from expression of viral proteins. The mechanism of action of the HIV-1 Tat protein was also studied at both the level of interaction with the RNA target sequence, Tar and direct protein-protein associations with a family of host proteins thought to be involved in regulation of transcription.

**Graduate research:**

My thesis research emphasized the use of molecular biological tools in studying protein-protein interactions of an *E. coli* DNA binding protein (SSB). This work resulted in identification of the initial *in vivo* interactions involving SSB and the heat shock protein Gro EL. In addition to the standard recombinant DNA methodology, this work involved the construction and screening of genomic libraries, protein purification, bacterial genetics, immunological techniques including Western blotting and RIA, and both *in vivo* and *in vitro* DNA synthesis studies.

**Honors & Awards:**

| | |
|---|---|
| 1989-1992 | Leukemia Society of America Fellowship |
| 1985-1987 | University Research Council Fellowship, University of Cincinnati |
| 1986 | Outstanding Research Award, American Society for Microbiology, Ohio Branch |
| 1982,1983 | Harry L. Weiman Foundation Fellowship, Department of Biological Sciences, University of Cincinnati |
| 1980-1987 | Graduate Teaching Assistantship, Department of Biological Sciences, University of Cincinnati |
| 1978 | Distinguished Achievement in Biological Sciences, Ohio State University |

**Ad Hoc Reviewer:**

Science
Virology
Molecular and Cell Biology
Journal of AIDS Research
Oncogene
Blood

**Societies:**

American Society for the Advancement of Science
American Society for Microbiology
American Diabetes Association

26. Papadopoulos, N, Nicolaides, NC, Wei, YF, **Ruben, SM**, Carter, KC, Rosen, CA, Haseltine, WH, Fleischmann, RD, Fraser, CM, Adams, MD, Venter, JC, Hamilton, SR, Petersen, GM, Watson, P, Lynch, HT, Peltomaki, P, Mecklin, JP, Chapelle, AD, Kinzler, KW & Vogelstein, B. (1994) Mutation of a mutL homolog in hereditary colon cancer. Science 263:1625-1629.

27. Nicolaides, NC, Papadopoulos, N, Liu, B, Wei, YF, Carter, KC, **Ruben, SM**, Rosen, CA, Haseltine, WH, Fleischmann, RD, Fraser, CM, Adams, MD, Venter, JC, Dunlop, MG, Hamilton, SR, Petersen, GM, Chapelle, AD, Vogelstein, B and Kinzler, KW. (1994) Mutations of two PMS homologues in hereditary nonpolyposis colon cancer. Nature 371:75-80.

28. Quelle, FW, Shimoda, K, Thierfelder, W, Fischer, C, Kim, A, **Ruben, SM**, Cleveland, JL, Pierce, JH, Keegan, AD, Nelms, K, et al. (1995) Cloning of murine Stat6 and human Stat5, Stat proteins that are tyrosine phosphorylated in responses to IL-4 and IL-3 but are not required for mitogenesis. Mol Cell Biol 15(6):3336-43.

29. Coleman, TA, Huddleston, KA, **Ruben, SM**, Rosen, CA, and Gentz, R. (1997) Expression and Reconstitution of NF-□B from Insect Cells Using a Baculovirus Vector. Protein Expr Purif 9:40-48.

30. Zeng, Z, Parmelee, D, Hyaw, H, Coleman, TA, Su, K, Zhang, J, Gentz, R, **Ruben, SM**, Rosen, C and Li, Y. (1997) Cloning and characterization of a novel human DNase. Biochemical and Biophysical Research Comm 231: 499-504.

31. Hu, J-S., Hastings, G.A., Cherry, S., Gentz, R., **Ruben, SM**, and Coleman, T.A. (1997) A novel regulatory function of proteolytically cleaved VEGF-2 for vascular endothelial and smooth muscle cells. FASEB 11:498-504.

32. Bui, TD., Rankin, J, Smith, K, Huguet, EL, **Ruben, SM**, Srachen, T, Harris, AL, and Lindsay, S. (1997) A novel human Wnt gene, WNT10B maps to 12q13 and is expressed in human breast carcinomas. Oncogene 14(10):1249-1253.

33. Mauri, DN, Ebner, R, Montgomery, RI, Kochel, KD, Cheung, TC, Yu, G-L, **Ruben, SM**, Murphy, M, Eisenberg, RJ, Cohen, GH, Spear, PG, Ware, CF. (1997) LIGHT, a new member of the TNF superfamily, and lymphotoxin alpha are ligands for herpesvirus entry mediator. Immunity 8(1):21-30.

34. Greene, JM, Li, Y-L, Yourey, PA, Gruber, J, Carter, KC, Shell, BK, Dillon, PA, Florence, C, Duan, DR, Blunt, A, Ornitz, DM, **Ruben, SM**, and Alderson, RF. (1998) Identification and characterization of a novel member of the fibroblast growth factor family. Eur. J. Neurosci. 10:1911-1925.

35. Haridas, V, Su, J, Yu, G, Ni, J, Chen, S, Ni, Y, **Ruben, S**, Shrivastava, A, Gentz, R, and Aggarwal, B. (1999) VEGI, a New Member of the TNF Family Activates Nuclear Factor-κß and c-Jun N-Terminal Kinase and Modulates Cell Growth. Oncogene Nov 11;18(47):6496-504.

36. Phillips, T, Ni, J, Pan, G, **Ruben, SM**, Wei, Y-F, and Hunt, JS. (1999) TRAIL (Apo-2L) and TRAIL Receptors in Human Placentas: Implications for Immune Privilege. J. Immunol. 162:6053-6059.

37. Zhai, Y, Ni, J, Jiang, GW, Lu, J, Xing, L, Lincoln, C, Janat, F, Kozak, D, Rojas, L, Aggarwal, B, **Ruben, S,** Li, L, Gentz, R, Yu, G.-L. (1999) VEGI, a novel cytokine of the tumor necrosis factor family, is an angiogenesis inhibitor that suppresses the growth of colon carcinoma in vivo. FASEB J. 13:181-189.

38. Zhai, Y, Guo, R, Hus, T-L, Yu, G-L, Ni, J, Kwon, BS, Jian, G.-W, Lu, J, Tan, J, Ugustus, M, Carter, K, Rojas, L.,Zhu, F, Lincoln, C, Endress, G, Xing, L, Wang, S, Oh, K-O, Gentz, R, **Ruben, S**, Lippman, ME, Hsieh, S-L, and Yang, D. (1998) LIGHT, a novel ligand for lymphotoxin beta receptor and TR2/HVEM induces apoptosis and suppresses in vivo tumor formation via gene transfer. J Clin Invest, 102:1142-1151.

39. Patel, VP, DeSilva, RT, White, B, Carrell, JA, Parmelee, D, Hilbert, DM, **Ruben, SM**, Gentz, R, and Garotta, G. (1999) The human β-chemokine MPIF-1 protects myeloid progenitors from cytotoxic effects of chemotherapeutic drugs *in vitro* and *in vivo*. In Press

40. **Ruben, S**. (1999) Use of genomic tools in the identification of bone-related therapeutics. Bone 25:81-83.

41. Xia, Y-P, Zhao, Y, Marcus, J, Jimenez, PA, **Ruben, SM**, Moore, PA, Khan, F, and Mustoe, AA. (1999) Effects of keratinocyte growth factor-2 (KGF-2) on would healing in an ischemia-impaired rabbit ear model and scar formation. J Pathol. Aug;188(4):431-8.

42. Moore, PA, Belvedere, O, Orr, A, Pieri, K, LaFleur, DW, Feng, P, Soppet, D, Charters, M, Gentz, R, Parmelee, D, Li, Y, Galperina, O, Giri, J, Roschke, V, Nardelli, B, Carrell, J, Sosnovtseva, S, Greenfield, W, **Ruben, SM**, Olsen, HS, Fikes, J, Hilbert, DM. (1999) BLyS: member of the tumor necrosis factor family and B lymphocyte stimulator. Science 285:260-263.

43. Shi, Y, Wang, W, Yourey, PA, Gohari, S, Zukauskas, D, Zhang, J, **Ruben, S**, Alderson, RF. (1999) Computational EST database analysis identifies a novel member of the neuropoietic cytokine family. Biochem Biophys Res Commun 262:132-138.

44. Rosen, C, Fannon, M, Garotta, G, **Ruben, S.** (1999) A Genomics Approach to Cytokine Discovery. In The Cytokine Network: Frontiers in Molecular Biology. Balkwill, F (ed), Oxford University Press, Oxford, United Kingdom,.

45. Cossman J, Vockley J, Carter K, **Ruben S**, Louis Staudt L, Barash S, Birse C, Rosen C, Dolginow D, Lennon G (1999) Genome-wide gene expression of the rare, malignant Reed-Sternberg cell of Hodgkin lymphoma *Nat. Genet.*: 23, 40 (Poster Abstracts)

46. Giovarelli M, Musiani P, Garotta G, Ebner R, Di Carlo E, Kim Y, Cappello P, Rigamonti L, Bernabei P, Novelli F, Modesti A, Coletti A, Ferrie AK, Lollini PL, **Ruben S**, Salcedo T, Forni G. (1999) A "stealth effect": adenocarcinoma cells engineered to express TRAIL elude tumor-specific and allogeneic T cell reactions. J. Immunol. 163(9):4886-93.

13. **Ruben, SM** and Rosen, CA. (1990). Constitutive expression of the HTLV-I Tax protein suppresses signals required for activation of the transcription factor, NFkB. New Biologist 2:894-902.

14. Rosen, C A and **Ruben, SM.** (1991), Regulation of Human Retroviruses. Drug News and Perspectives, 4:340-351.

15. **Ruben, SM**, Dillon,PJ, Schreck, R, Henkel, T, Chen, C-H, Maher, M, Baeuerle PA, and Rosen, CA. (1991) Isolation of a *rel* related human cDNA that potentially encodes the 65kD subunit of NFkB. Science 251:1490-1493.

16. Rosen, CA, and **Ruben, SM**, Function of human retrovirus regulatory proteins. (1991) in Annual Review of Medicinal Chemistry, ed. C. Plattner, 171-180.

17. **Ruben, SM**, Narayanan, R, Klement, JF, and Rosen, CA. (1992) An alternatively spliced form of NF-kB p65 defines an essential functional domain, Mol Cell Biol 12:244-255.

18. **Ruben, SM,** Klement, JF, Maher, M, Coleman, TA, Chen, C.-H.,and Rosen, CA. (1992) I-Rel: A novel rel-related protein that inhibits NF-kB transcriptional activity. Genes Develop 6:745-760.

19. Narayanan, R, Klement, JF, **Ruben, SM**, Higgins, K, and Rosen, CA. (1992) Identification of a naturally occurring transforming varient of the p65 subunit of NF-kB. Science 256:367-370.

20. Kunsch, C, **Ruben, SM**, and Rosen, CA. (1992) Selection of optimal kB/Rel DNA binding motifs: Interaction of both subunits of NF-kB with DNA is required for transcriptional activation. Mol Cell Biol 12:4412-4421.

21. Rosen, CA, Dillon, PJ, Olsen, HS, and **Ruben, SM.** (1992) Complexities of Human Retrovirus Gene Expression, p.235-254 in *Genome Research in Molecular Medicine and Virology.*, Academic Press, Inc., Orlando, FL, ed. K.W. Adolf.

22. **Ruben, SM**, Beg, AA, Scheinman, RI, Haskill, S, Rosen, CA, and Baldwin, Jr. AS. (1992) IkB/MAD-3 interacts with the nuclear localization sequences of the subunits of NF-kB: a mechanism for cytoplasmic retention. Genes and Develop 6:1899-1913.

23. Moore, P, **Ruben, SM**, and Rosen, CA. (1993) Conservation of transcriptional activation functions of the NF-kB p50 and p65 subunits in mammalian cells and *Saccharomyces cerevisiae.* Mol Cell Biol 13: 1666-1674.

24. Ohana, B, Moore, P, **Ruben, SM**, Southgate, CD, Green, M, and Rosen, CA. (1993) The type 1 HIV Tat binding protein is a transcriptional activator belonging to an additional family of evolutionarily conserved genes. Proc. Natl. Acad. Sci. 90:138-142

25. Coleman, T.A., Kunsch, C., Maher, M., **Ruben, SM**, and Rosen, C.A. (1993) Acquisition of NFKB1-selective DNA-binding by substitution of four amino acid residues from NF□B1 into RelA. Mol. Cell. Biol 13:3850-3859.

**Publications:**


1. Meyer, RR, Voegele, DW, **Ruben, SM**, Rein, DC, and Trela, JM. (1982) Influence of single-strand DNA-binding protein on *Rec*A induction in *Escherichia coli*. Mutat. Res. June;94(2):299-313.

2. **Ruben, SM**, Van Den Brink, SW, Rein, DC, and Meyer, RR (1985). Protein interactions of single-stranded DNA-binding protein determined by second-site revertent analysis. Ohio J. of Science 85: 62.

3. Meyer, RM, **Ruben, SM**, Van Den Brink-Webb, SE, Laine, PS, Perrino, FW, and Rein, DC. (1988) Protein-protein interactions of *Escherichia coli* single-stranded DNA-binding protein. In *DNA Replication and Mutagenesis*, R.E. Moses and W.C. Summers, eds., American Society for Microbiology, Washington, DC, pp. 154-162.

4. **Ruben, SM**, Van Den Brink-Webb, SE, Rein, DC, and Meyer, RR. (1988) Suppression of the escherichia coli ssb-1 mutation by an allele of groEL. Proc. Natl. Acad. Sci. USA June;85(11):3767-71.

5. **Ruben, S**, Poteat, H, Tan, T.-H, Kawakami, K, Roeder, R, Haseltine, W, and Rosen, CA. (1988) Cellular transcription factors and regulation of interleukin-2 receptor gene expression by human T-cell leukemia virus tax gene product. Science Jul 241(1):89-91.

6. **Ruben, S**, Perkins, A, Purcell, R, Joung, K, Sia, R, Burghoff, R, Haseltine, WA, and Rosen, CA. (1989) Structural and functional characterization of the human immunodeficiency virus *tat* protein J. Virol. Jan 63(1):1-8.

7. Perkins, A, Cochrane, AW, **Ruben, SM** and Rosen, CA. (1989). Structural and functional characterization of the human immunodeficiency virus *rev* protein. J. Acquir Imm Def Syndr 2:256-263.

8. Cochrane, A., Kramer, R., **Ruben, S**, Levine, J. and Rosen, C.A. (1989). The human immunodeficiency virus *rev* protein is a nuclear phosphoprotein. Virology 171:264-266.

9. Cochrane, A.W., Golob, E., Volsky, D., **Ruben, S**, Rosen, C.A. (1989) Functional significance of phosphorylation to human immunodeficiency virus *rev* protein. J. Virol. 63:4438-4440.

10. Cochrane, A., **Ruben, S.**, Nelbock, P. and Rosen, C. A. (1989) Functional and structural domains of the human immunodeficiency virus transacting regulatory proteins *tat* and *rev* in *Human Retroviruses*. Vol. 119, Alan Liss, Inc.

11. **Ruben, SM**, Perkins, A, and Rosen, CA. (1989) Activation of NFkB by the HTLV-I trans-activator protein requires an additional factor present in lymphoid cells. New Biologist 1:275-284.

12. Kramer, R.A., Tomchak, L., **Ruben S**, and Rosen, CA. (1990) Yeast cells expressing the *tax* gene of Human T-cell Leukemia Virus Type I exhibit a Flocculaction phenotype identical to *FLO1* mutants. Aids Research and Human Retroviruses 6:1305-1309.

47. Yu R, Mandlekar S, **Ruben S**, Ni J, Kong AN. (2000) Tumor necrosis factor-related apoptosis-inducing ligand-mediated apoptosis in androgen-independent prostate cancer cells. Cancer Res. 60(9):2384-9.

48. Hamil KG, Sivashanmugam P, Richardson RT, Grossman G, **Ruben SM**, Mohler JL, Petrusz P, O'Rand MG, French FS, Hall SH. (2000) HE2beta and HE2gamma, new members of an epididymis-specific family of androgen-regulated proteins in the human. Endocrinology.;141(3):1245-53.

49. Giovarelli M, Cappello P, Forni G, Salcedo T, Moore PA, LeFleur DW, Nardelli B, Carlo ED, Lollini PL, **Ruben S.**, Ullrich S, Garotta G, Musiani P. (2000) Tumor rejection and immune memory elicited by locally released LEC chemokine are associated with an impressive recruitment of APCs, lymphocytes, and granulocytes. J Immunol. 164(6):3200-6.

50. Richardson, R., Sivashanmugam, P., Hall, S.H., Hamil, K.G., **Ruben SM,** French, F.S., Moore, P. and O'Rand, M.G. (2000) Cloning and sequencing of human *Eppin*: A novel family of protease inhibitors expressed in the epididymis and testis. Gene 270:93-102.

51. Yu, R, Mandlekar, S, **Ruben, S**, Ni, J, Kong, AN. (2000) Tumor necrosis factor-related apoptosis-inducing ligand-mediated apoptosis in androgen-independent prostate cancer cells. Cancer Res. 60(9):2384-9.

52. Shi Y, Ullrich SJ, Zhang J, Connolly K, Grzegorzewski KJ, Barber MC, Wang W, Wathen K, Hodge V, Fisher CL, Olsen H, **Ruben SM**, Knyazev I, Cho YH, Kao V, Wilkinson KA, Carrell JA, Ebner R. (2000) A novel cytokine receptor-ligand pair. Identification, molecular characterization, and in vivo immunomodulatory activity. J Biol Chem. ;275(25):19167-76.

53. Wu Y, Bressette D, Carrell JA, Kaufman T, Feng P, Taylor K, Gan Y, Cho YH, Garcia AD, Gollatz E, Dimke D, LaFleur D, Migone TS, Nardelli B, Wei P, **Ruben SM**, Ullrich SJ, Olsen HS, Kanakaraj P, Moore PA, Baker KP. (2000) Tumor necrosis factor (TNF) receptor superfamily member TACI is a high affinity receptor for TNF family members APRIL and BLyS. J Biol Chem.; 275(45):35478-85.

54. Wei, P, Zhao, YG, Zhuang, L, **Ruben, SM**, Sang ,QX. (2001) Expression and enzymatic activity of human disintegrin and metalloproteinase ADAM19/meltrin beta. Biophys Res Commun. 280(3):744-55.

55. Richardson RT, Sivashanmugam P, Hall SH, Hamil KG, Moore PA, **Ruben SM**, French FS, O'Rand M (2001) Cloning and sequencing of human Eppin: a novel family of protease inhibitors expressed in the epididymis and testis. Gene.;270(1-2):93-102.

56. LaFleur, DW, Nardelli, B, Tsareva, T, Mather, D, Feng, P, Semenuk, M, Taylor, K, Buergin, M, Chinchilla, D, Roshke, V, Chen, G, **Ruben, SM**, Pitha, PM, Coleman, TA, Moore, PA. (2001) Interferon-kappa, a novel type i interferon expressed in human keratinocytes. J Biol Chem. ;276(43):39765-71.

57. Wei P, Zhao YG, Zhuang L, Hurst DR, **Ruben S**, Sang QX. (2002) Protein engineering and properties of human metalloproteinase and thrombospondin 1. Biophys Res Commun. 293(1):478-488

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59. Barber TD, Barber MC, Tomescu O, Barr FG, **Ruben S**, Friedman TB. (2002) Identification of target genes regulated by PAX3 and PAX3-FKHR in embryogenesis and alveolar rhabdomyosarcoma. Genomics;79(3):278-84.

60. Chen C, Grzegorzewski K, Barash S, Zhao Q, Schneider H, Wang Q, Singh M, Pukac L, Bell A, Duan R, Coleman T, Duttaroy A, Cheng S, Hirsch J, Zhang L, Lazard Y, Fischer C, Barber MC, Ma ZD, Zhang YQ, Reavey P, Zhong L, Teng B, Sanyal I, **Ruben, SM**, Blondel, O, Birse CE, (2003) An integrated Functional screening program reveals a role for BMP-9 in glucose homeostasis. Nat. Biotechnol. ;21(3):294-301

61. Fiscella M, Perry JW, Teng B, Bloom B, Zhang C, Leung K, Pukac L, Florence K, Concepcion A, Liu B, Meng Y, Chen C, Elgin EC, V, Kanakaraj P, Kaufmann TE, Porter J, Cibotti R, Mei Y, Zhou J, Chen G, Roschke V, Koumatsoulis G, Mansfield B, **Ruben S**, Sanyal I and Migone T-S. (2003) TIP, a novel T-cell factor identified using high-throughput screening increases survival in a graft-versus-host-disease model. Nat. Biotechnol. 21(3):302-7

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63. Edwards BM, Barash SC, Main SH, Choi GH, Minter R, Ullrich S, Williams E, Du Fou L, Wilton J, Albert VR, **Ruben SM**, Vaughan TJ. (2003) The remarkable flexibility of the human antibody repertoire; isolation of over one thousand different antibodies to a single protein, BLyS. J Mol Biol. :334(1):103-18.

64. Yenugu S, Hamil KG, Birse CE, **Ruben SM**, French FS, Hall SH. (2003) Antibacterial properties of the sperm-binding proteins and peptides of human epididymis 2 (HE2) family; salt sensitivity, structural dependence and their interaction with outer and cytoplasmic membranes of Escherichia coli.Biochem J.;372(Pt 2):473-83.

**Presentations**

1. "Identification of novel human genes through high throughput random sequencing" Large-scale DNA Sequencing International Symposium, Kokuritsu Kyoiku Kaikan, Tokyo, March 16-18, 1994.

2. "Use of high-throughput analysis of sequences for the discovery of novel therapeutics and diagnostics" Impact of Genomics on Inflammation Research, New York Academy of Sciences, New York, NY, October 18, 1995

3. "Use of high-throughput analysis of sequences for the discovery of novel therapeutics and diagnostics" Genome-Based Drug Discovery, International Business Communications, Marina Del Ray, CA, March 21-22, 1996.

4. "Utilizing High Throughput Sequencing for the Discovery of Novel Therapeutics and Diagnostic Targets" The Application of Genomics to Drug Discovery, Strategic Research Institute, Philadelphia, PA, May 30-31, 1996.

5. "Contributions of Genomics to Discovery of New Targets for Neuroscience Medicine" 6th World Congress of Biological Psychiatry, Nice, France, June 22-27, 1997.

6. "Use of Large cDNA Databases Toward the Discovery of New Therapeutic Proteins" Drug Discovery Technology '97, International Business Communications Group, San Diego CA, August 11-14, 1997.

7. "From Sequencing to Clinic: Use of cDNA Databases Toward the Discovery of Therapeutic Proteins" MIT Club, Washington DC, January 22, 1998.

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